

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing this collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.

1. REPORT DATE (DD-MM-YYYY) 22 July 2005		2. REPORT TYPE Final Report		3. DATES COVERED (From - To) July 2004 to July 2005	
4. TITLE AND SUBTITLE A Case Study on the Implementation of the Hospital Emergency Incident Command System at Naval Hospital Pensacola				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S) Dawn Marie Freeman, LT, Medical Service Corps, U.S. Navy				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Hospital Pensacola 6000 West Highway 98 Pensacola, FL 32512-0003				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) US Army Medical Department Center and School BLDG 2841 MCCS-HRA (Army-Baylor Program in Healthcare Administration) 3151 Scott Road, Suite 1411 Fort Sam Houston, TX 78234-6135				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S) 32-05	
12. DISTRIBUTION / AVAILABILITY STATEMENT Approved for public release; distribution is unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT This study analyzed how Naval Hospital Pensacola (NHP) utilized the Hospital Emergency Incident Command System (HEICS) model during Hurricane Ivan. The author conducted a literature review using resources at the medical library of NHP and emergency management websites; interviewed the sector officers and Directors of the Office of Homeland Security for the military services; and analyzed emergency management policies and documents related to Hurricane Ivan. Based on this research, the author presented conclusions and recommendations on how HEICS can be used to improve hospital emergency management programs. Finally, the author developed an implementation plan, which outlines the responsibilities and procedures to be followed for HEICS implementation at all Navy medical treatment facilities.					
15. SUBJECT TERMS Emergency Management, Hospital Emergency Incident Command System					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 69	19a. NAME OF RESPONSIBLE PERSON Education Technician
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (include area code) (210) 221-6443

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

Running head: Naval Hospital Pensacola Hospital Emergency
Incident Command System

A Case Study on the Implementation of the Hospital
Emergency Incident Command System at Naval Hospital
Pensacola

LT Dawn Freeman

U.S. Army-Baylor University MHA Program

16 May 2005

A paper submitted in partial fulfillment of the
requirements for the U.S. Army-Baylor University Graduate
Program in Health Care Administration

20060315 106

DISCLAIMER

The assumptions, opinions, or assertions expressed in this paper are the private views of the author and do not reflect the official policy or position of the Naval Hospital Pensacola, the U.S. Army-Baylor University Graduate Program in Health Care Administration, the Department of the Navy, or the Department of Defense.

ACKNOWLEDGEMENTS

First, I would like to thank my family for their endless support and encouragement to enter and complete this program. It has definitely challenged me for the past 2 years and I feel I am a better person for having gone through it.

I thank my soul mate, Jon, for his constant support and understanding during this endeavor. He has been my foundation when times were hard and was always there with a positive word.

To my professors at the Army-Baylor program, thank you for providing me with the knowledge and skills to complete this graduate management project and to become a better health care administrator.

-----Special thanks to Captain Peter F. O'Connor and-----
Captain Kim Lyons who shared their valuable time to ensure that I kept on the right path during my rotation through Naval Hospital Pensacola.

Finally, I would also like to thank Captain Matthew Nathan for his inspiring leadership and the staff at Naval Hospital Pensacola for their willingness to share and teach a junior health care administrator.

ABSTRACT

This study analyzed how Naval Hospital Pensacola (NHP) utilized the Hospital Emergency Incident Command System (HEICS) model during Hurricane Ivan. The author conducted a literature review using resources at the medical library of NHP and emergency management websites; interviewed the sector officers and Directors of the Office of Homeland Security for the military services; and analyzed emergency management policies and documents related to Hurricane Ivan. Based on this research, the author presented conclusions and recommendations on how HEICS can be used to improve hospital emergency management programs. Finally, the author developed an implementation plan, which outlines the responsibilities and procedures to be followed for HEICS implementation at all Navy medical treatment facilities.

TABLE OF CONTENTS

DISCLAIMER	2
ACKNOWLEDGEMENTS	3
ABSTRACT	4
INTRODUCTION	7
Background	7
Conditions Which Prompted the Study	9
Statement of the Problem	11
Purpose	12
LITERATURE REVIEW	12
Evolution of the Emergency Management System	13
Evolution of the Incident Command System	16
Evolution of HEICS	18
Attributes and Organization of HEICS	19
Benefits of HEICS	20
Adoption of Emergency Management by JCAHO	21
JCAHO Standards for Emergency Management	21
Evolution of Emergency Management in Navy Medicine	22
METHODS	26
Study Design	26
Data Collection	26
Validity and Reliability	28
Ethical Issues	28
RESULTS	29
Document Review	29
The Bureau of Medicine and Surgery (BUMED)	29
The Naval Air Station (NAS) Pensacola	
Regional Disaster Preparedness Plan	30
The Naval Hospital Pensacola Emergency	
Preparedness Management Plan	34
RESULTS OF INTERVIEWS	37
Obstacles	40

DISCUSSION	42
CONCLUSION	53
IMPLEMENTATION RECOMMENDATIONS	55
NEED FOR FURTHER RESEARCH	58
REFERENCES	60
APPENDIX A: ACRONYMS	66
APPENDIX B: INTERVIEW QUESTIONS	67
APPENDIX C: TABLE OF TOP TEN DISASTERS	68

INTRODUCTION

Background

According to a news release dated October 15, 2004, over 936,000 people have sought assistance for losses suffered from Hurricanes Charley, Frances, Ivan, Jeanne and Tropical Storm Bonnie. To date, an amazing \$1.7 billion in federal and state aid has been provided to the victims of these hurricanes

(www.fema.gov/news/newsrelease.fema?id=14828). Not since the 1880s, and never in Florida's history, has the calamity of four hurricanes striking one state in a single season occurred (www.fema.gov/news/newsrelease.fema?id=14828).

Five of the top ten natural disasters ranked by relief costs (see Appendix C) are categorized as hurricanes,

~~tropical storms, or floods.~~ All five have affected a portion of Florida's 1,200-mile long coastline

(www.fema.gov/library/df_8.shtm).

A hurricane, according to Williams and Duedall (1997), is an extremely violent, whirling, and spiraling tropical cyclone, which frequently originates in a tropical region. To be officially classified as a hurricane, wind speed in a tropical cyclone must be 74 mph or greater. The highest wind speed documented for Hurricane Ivan was 165 mph on

September 11, 2004

(www.nhc.noaa.gov/archive/2004/tws/MIATWSAT_sep.shtml).

Because modern technology exists that will track a hurricane's progress, communities in its path will usually be warned of the storm's strength. In his book, *When Disaster Strikes*, Rick Eyerdam (1994) shares lessons learned from Hurricane Andrew. One of the recommendations made in the aftermath of Hurricane Andrew addresses the need for an augmented National Weather Service warning system for the health care community. According to Eyerdam, hospitals wait to act until a hurricane warning has been issued and that is when hurricane force winds are forecast to arrive within 24 hours. In this time frame a hospital must transport patients, cancel procedures, and prepare the facility structurally to close the facility.

Although a hurricane's path can change hourly, Eyerdam says that providing hospitals warning information about the percentage of risk of landfall near their location and likelihood of facility damage will allow them the time they need to plan their appropriate response.

Since its inception in 1826, NHP has experienced Hurricanes Erin (1995), Opal (1995), and Juan (2003) (Williams, Duedall, 1997). Today, Naval Hospital No. 6, the first to be built off base, is home to Navy Medicine in

Pensacola (<http://psaweb.med.navy.mil/History.htm>). It prides itself on being the home of Navy medicine's six family practice residency-training programs and also boasts of the recent deployment of its fleet hospital, which deployed as Fleet Hospital Three to support Operation Iraqi Freedom.

Currently, NHP provides medical care to more than 73,000 eligible beneficiaries throughout northwest Florida and south Alabama, and more than 200,000 beneficiaries at its 12 branch medical clinics across four states (<http://psaweb.med.navy.mil/History.htm>). The results of Hurricane Ivan left a 30-year-old facility with an estimated \$5 million in property damage to include the loss of a large section of roof (J. Ayers, personal communication, March 22, 2005). Four days after Ivan, NHP returned to near normal operating status (Duren, 2004).

Conditions Which Prompted the Study

On Monday, September 13, 2004, Hurricane Ivan, the ninth tropical cyclone of the 2004 Atlantic hurricane season, began its tumultuous advance toward the Florida Panhandle. In preparation, NHP set in motion its emergency management plan. At approximately 0300 hours, on Thursday, September 16, 2004, the eye of Hurricane Ivan touched down near Gulf Shores, Alabama, only 30 miles west of Pensacola.

Maximum sustained winds at landfall were nearly 130 mph.

Ivan was categorized as a strong category three (winds between 111 and 130 mph) hurricane. It wreaked havoc throughout the Pensacola area, causing severe damage to life, limb, and property.

The destruction to the area was extensive, and NHP was not spared. Despite the damage to NHP, staff remained focused on the mission and continued to provide services to the active duty, dependent, and retiree population throughout the ordeal. Moreover, the staff provided assistance to West Florida Hospital, a civilian community treatment facility. For example, NHP staff members sterilized surgical equipment for them when their sterilization capability was compromised.

-----One of the Navy Surgeon General's priorities is joint medical capability. "The military health system plays a critical role in national security; and it will be trained, fully integrated with our colleagues, and absolutely ready to respond" (D. Arthur, personal communication, September 2004). According to Captain Nathan, Commanding Officer of NHP, while the collegial interaction was significant, this hurricane provided the impetus to strengthen intra-area cooperation to even more effectively deal with future natural disasters. That cooperative spirit was also

acknowledged by Naval Operational Medicine Institute's Commanding Officer, Captain Musashe, when he said that "the basic tenet of Homeland Security is to maintain seamless operations, whether a disaster is man-made or natural."

Statement of the Problem

Before 9/11, emergency preparedness was typically implemented when a natural disaster was imminent. Many facilities had never reviewed their emergency management plans. Furthermore, the plans were typically not tested, but were used only in times of actual disaster. In order for a facility to truly be operationally effective, all personnel should be intimately familiar with the emergency management plan.

Actively reviewed emergency management plans are a necessity for all medical facilities. A medical facility should be prepared for any incident. The probability of damage from an emerging natural catastrophe will require different levels of emergency response. The support of the hospital leadership in effective emergency preparedness will ensure proper training practices are executed. Involvement should include all personnel and should not be localized to a specific department within a medical facility.

The successful execution of the Hospital Emergency Incident Command System (HEICS) will promote interagency cooperation, which in turn, will ensure proper channels of communication, as well as effective and efficient emergency management.

Purpose

This case study will illustrate the importance of the implementation of the HEICS model and the challenges it poses for a military treatment facility (MTF).

Specifically, it will examine how the organizational structure and culture affect the implementation of the HEICS model. The model is an emergency management system, which establishes the guidelines to assist hospitals in response to disasters. The NHP staff is the study's unit of analysis. The observation period is Monday, September 13, 2004 through Friday, October 1, 2004.

LITERATURE REVIEW

A literature review was conducted to research emergency management, the Incident Command System (ICS), and the history and evolution of HEICS. Current policies on emergency management established by the Department of Defense, the Department of the Navy, and NHP were also researched. The purpose of this review was to determine

how emergency management evolved and how it has been integrated into the medical community.

Evolution of the Emergency Management System

Emergency management is a coordinated effort, which involves local, state, and federal agencies, as well as, volunteers, organizations, and businesses. These organizations assist citizens within the community to prepare, respond, and recover from the effects of all disasters, natural or man-made. The history of the emergency management structure dates back to World War I when civil defense efforts became every citizen's civic duty (<http://www.acep.org/1,33927,0.html>). In 1916, the U.S. Army Appropriations Act established the National Defense Council, which encouraged states to create local as well as state defense councils. During World War II, President Roosevelt created the Federal Office of Civilian Defense, and it directed civil defense systems to be created by each city in preparation for possible dangers aimed at the United States.

Since World War II, many programs have transformed emergency management into a system designed to deal with many different hazards. Today's focus is on preparations that will ensure a strong response and recovery capability (<http://www.ci.league-city.tx.us/index.asp?SID=450>). In

1979, by Executive Order, the Federal Emergency Management Agency (FEMA) was established to combine the many disaster-related programs into one, seamless agency. John Macy, FEMA's first director, highlighted the similarities required to deal with natural hazards and civil defense activities, which also fell within FEMA's scope of responsibility. The agency developed an Integrated Emergency Management System with an all-hazards approach that included "direction, control and warning systems which are common to the full range of emergencies from small isolated events to the ultimate emergency - war."
(www.fema.gov/about/history.shtm).

In 1993, James L. Witt became the first agency director with experience as a state emergency manager. He initiated sweeping reforms that streamlined disaster relief and recovery operations. Additionally, Witt was vehemently adamant that greater emphasis be placed on preparedness and mitigation, as well as on customer service by the agency's employees (www.fema.gov/about/history.shtm). This all-hands approach has propelled FEMA into the 21st Century and into public view as one of the four major branches of the Department of Homeland Security (DHS).

The creation of the DHS has caused comprehensive changes in the emergency management community

(www.acep.org/1,33927,0.html). Prior to DHS, the Federal Response Plan required lead federal agencies to monitor their assets to support state and local authorities (www.acep.org/1,33927,0.html). At this time, movement of the responsibility of these assets to the DHS has caused health and medical assets to be separated and has also caused confusion (www.acep.org/1,33927,0.html). Moreover, the role of the Federal Response Plan is being expanded and combined with the National Response Plan. It is expected that the National Response Plan will facilitate the integration of the Federal Bureau of Investigation, the Department of Defense, the Department of Justice, and the Department of State in order to create a fully integrated interagency disaster response (www.acep.org/1,33927,0.html). The Department of Health and Human Services is the agency primarily responsible for the aspects of the Public Health and Medical Services Annex in the National Response Plan.

The issuance of Homeland Security Presidential Directive (HSPD)-5 provides for the development of a National Incident Management System (www.acep.org/1,33927,0.html). According to DHS's first Secretary, Tom Ridge, "The National Incident Management System strengthens our nation's response capabilities in

responding to terrorist attacks, natural disasters, and other emergencies by providing all first responders and authorities with the same foundation for incident management" (Fire Engineering, May 2004). After October 1, 2004, federal departments and agencies were required to adopt the National Incident Management System. The adoption was a condition for state and local organizations to receive federal preparedness assistance (www.fema.gov/preparedness/nims/nims.shtm).

Evolution of the Incident Command System

One of the key features of the National Incident Management System is ICS, an emergency management system that evolved as a necessity to facilitate improved coordination of the increased interagency involvement during disaster responses. This system was first used in the 1970s regarding wildfire management. At that time, standard emergency management had a number of significant problems to include an inadequate number of supervisors, inadequacies in communication agency plans, indistinct lines of authority, and ambiguous incident objectives. The ICS represented a significant departure from previous large-scale emergency management methods in that it stressed a universal organization with specific structure and control (Bigley and Roberts, 2001).

Firefighting Resources of California Organized for Potential Emergencies (FIREScope) was organized after the disastrous 1970-wildland fires in southern California. Today, it continues its cooperative effort involving all agencies with fire control responsibilities in California. Its original goals were to create and implement new applications in fire service management, technology, and coordination, with an emphasis on incident command and multi-agency coordination.

FIREScope increased the effectiveness and efficiency through shared resources between multiple agencies (i.e. fire department, police department, medical resources). Its success made ICS the cornerstone of the FEMA's integrated emergency management system (Bigley and Roberts, 2001). Today, ICS has evolved into a highly-formalized, all-risk system with extensive rules, procedures, policies and instructions.

The five functional areas of ICS are command, operations, planning, logistics, and finance. These functional areas are integrated into a common organizational structure designed to improve emergency response operations of all types and complexities. Of particular interest is the principle of unified command that the structure of ICS fosters. It not only coordinates

the efforts of many jurisdictions, but also provides for and guarantees joint decisions on objectives, strategies, plans, priorities, and public communication

(www.dhs.gov/dhspublic/display?theme=14&content=3697).

Agencies such as FEMA, the Occupational Safety and Health Administration, the Environmental Protection Agency, and the Joint Commission on Accreditation of Health Care Organizations have all endorsed the use of ICS in disaster management.

Evolution of HEICS

A hospital specific version of the ICS is HEICS. Its initial public reference, in 1987, was in a publication entitled *Earthquake Preparedness Guidelines for Hospitals* (www.ucihs.uci.edu/emergencymanagement/emergencyMngtProgram/HEICS/heicsHistory.html). This document served as the cornerstone for the development of the original HEICS model, written by Orange County Emergency Medical Services. The State of California Emergency Medical Services Authority funded the first two editions of HEICS in 1991 and 1992. In 1998, the County of San Mateo Emergency Management Service authored the third revision of HEICS. A survey of California hospitals, in the spring of 1997, generated the data for this latest edition. The data identified no major complaints with the HEICS plan;

however, more education on the flexibility of HEICS for medical facilities of all sizes was recognized as a necessity.

Attributes and Organization of HEICS

The key attributes of ICS are also incorporated into the HEICS model. A commonality of mission and language allows an easier understanding of similar positions in two vastly different organizations, such as military and civilian health care facilities. Strangely, communication can even be a challenge between two similar organizations, such as the Department of the Army and the Department of the Navy. For instance, the Director for Administration in the Navy is in charge of medical administration and facilities. In the Army, this position is titled Deputy Commander for Administration and does not necessarily have the facilities department under its purview. By using standardized titles with uniform job descriptions, instant knowledge and understanding is obtained when discussing issues between agencies. In the HEICS model, Job Action Sheets provide title specific job descriptions with prioritized checklists, which enable a quick orientation to the position. These position descriptions mirror normally staffed positions within the organization and therefore keep disruption of day-to-day activities to a minimum.

Finally, HEICS allows for flexible implementation of specific positions, which might be required in an emergency (Goldfarb, 1996).

The HEICS organization is similar to the standard ICS organization, consisting of an incident commander and four principal sector officers: operations, logistics, planning, and finance. These officers then designate directors and unit leaders to ensure even workload management.

Benefits of HEICS

The implementation of HEICS has demonstrated success. In Taipei City, Taiwan, area hospitals began implementing HEICS in 2002 and used it to deal effectively with the SARS issues in 2003. They discovered that there are distinctive advantages when all participants to disaster response operate in a similar fashion. These advantages include a predictable chain of management, accountability of position duties, a flexible organizational chart allowing variable response to specific emergencies, improved documentation of the facility response, common language to facilitate outside assistance, prioritized response checklists, cost effective emergency planning within health care corporations, and meeting governmental requirements in public hospitals (<http://www.disaster.org.tw/ENGLISH/ann-med/vol2nol/n23text.htm>). In September 2004, the staff at

Naval Hospital Corpus Christi also heralded the benefits of HEICS when they reinforced responders from a three-county area in a simulated Homeland Security threat in Corpus Christi, Texas. "HEICS provides an all hazards approach for responding from disasters and is the same system Naval Hospital Corpus Christi has adopted"

(www.news.navy.mil/search/display.asp?story_id=15233).

Adoption of Emergency Management by JCAHO

For many years, hospitals have been required to possess and exercise emergency management plans. The Joint Commission's standards concerning the environment of care have always required organizations to prepare for various disasters. "An emergency is defined by JCAHO as a natural or man-made event that suddenly or significantly disrupts the environment of care; disrupts care and treatment; or changes or increases demands for an organization's services"

(www.jcaho.org/accredited+organizations/hospitals/standards/ems+facts.htm).

JCAHO Standards for Emergency Management

As of January 2001, JCAHO required hospitals to have a comprehensive plan in place to encompass the four traditional phases of emergency management: mitigation, preparedness, response, and recovery. Plans are to be

tested and modified by at least one tabletop exercise and one full-scale exercise or actual plan activation each year (Rubin, 2004). Following the terrorist attacks of 9/11, JCAHO modified the standards to require the plan to include "integrating the organization's role with community wide emergency preparedness efforts." These standards create an environment that is conducive to innovation and collaboration with regard to emergency management effectiveness and efficiency. This modification was effective January 1, 2003

(<http://www.jcaho.org/about+us/public+policy+initiatives/health+care+at+the+crossroads.pdf>).

Finally, JCAHO emergency standards specifically cite HEICS as the standardized incident management system for all hospitals (Rubin, 2004).

Evolution of Emergency Management in Navy Medicine

Historically, Navy medicine's response to emergency management was to maintain the usual chain of command. Unfortunately, this does not promote flexibility. The old mindset was that military members and command climates have a need for traditional military structure in order to operate efficiently and effectively; however, the current state of the world suggests this may not be true. After 9/11, the Navy established the Navy Medicine Office of

Homeland Security, which developed the Disaster Preparedness, Vulnerability Analysis, Training and Exercise (DVATEX) Program. This program is designed to reinforce emergency preparedness of MTFs and to help reduce their vulnerabilities. It consists of three components: vulnerability analysis, targeted training, and exercise of the command's emergency management plan. Part of the assessment includes analysis of ICS programs. At some MTFs (including NHP) localized versions of ICS have already been implemented. However, these local versions have varying degrees of completion.

As terrorist or pseudo-military attacks become more viable, it is essential that the military and civilian sectors of a community pool their medical resources. For example, bioterrorism is a definite possibility and military medical personnel generally possess the most knowledge concerning biological agents, as evidenced by the response to the anthrax panic in 2002. In the event of a biological attack, military personnel would have to play a vital role in the community, not only in treating acute cases, but in educating the populace as well. Additionally, terrorist attacks are designed to cause massive human casualties, a scenario for which the military possesses the preparation and training.

Natural disasters pose a threat similar to that of terrorist attacks in terms of damage, both physical and emotional. Immediately after a natural disaster, an MTF may be the only hospital capable of providing care. It may also be called upon to provide overflow support to other hospitals and vice versa. Consequently, local military health care leaders need to forge new relationships, or strengthen existing ones, with their civilian colleagues. This can be an arduous and ongoing task given the staff turnover rate at MTFs.

However, change is one of the greatest problems that health care executives must confront in their roles as managers and decision-makers (Fried and Johnson, 2002). As a general rule, individuals are resistant to change, and groups tend to be even more resistant. The resources needed to educate those affected by change and the potential benefits from education can be enormous. Obviously, the larger the group, or the larger the change, the more complex it will be and the more resources it will consume. For example, on a medical, macro level, the Department of Defense decided to change its inoculation program to include anthrax shots for the safety of its deployed personnel. There was moderate resistance to this initiative and extended national press coverage. The

Department of Defense spent millions of dollars and thousands of man-hours to educate its personnel, and the rest of the country, on the reasons for and benefits of this change.

Fried and Johnson (2002) state "in order to better understand and manage change, health care managers need to look at it from both perspectives." Possessing an adequate understanding of how comfortable people are with a change will facilitate implementation of it. Several methods of identifying individuals' thoughts or ideas exist. One method, the interview, offers an individual the opportunity to give and receive immediate feedback on the current process and the feasibility of the proposed change.

However, interviews are time consuming and not effective in large organizations. More effective measures may include surveys and "town hall" meetings, which are the civilian equivalent of Commanding Officer's Calls. These forums offer individuals a voice in the change while maximizing time and resources. Once barriers to change are identified, a strategy can be implemented to address the concerns of the individuals and facilitate a smooth transition to the new process. An effective education and training program will fortify the new hospital emergency management system called HEICS.

METHODS

The objective of this case study were to use the knowledge and skills acquired from the HEICS training module during the Medical Readiness Course at the Army-Baylor Graduate Program for Health Care Administration and to use the lessons learned from Hurricane Ivan to improve the implementation of the HEICS model at NHP. Lessons learned were captured by interviewing staff members who were intimately familiar with the HEICS model and were actively involved in the Incident Command Center during Hurricane Ivan.

Study Design

A qualitative study design was used to research the implementation of the HEICS model at NHP. The two primary references used to conduct the study design were Robert K. Yin's *Case Study Research, Design and Methods* (2003) and *Qualitative Research in Health Care* (2000) by Catherine Pope and Nicholas Mays. They guided the author in the development of the study design, assisted with data collection, and helped to determine the reliability and validity of the case study.

Data Collection

Multiple sources of evidence were used to establish construct validity and reliability. Information was

gathered from interviews, document review, and direct observation. Interviews were conducted with individuals involved with the emergency management plan at NHP, as well as the Incident Commander and the four principal sector officers who were assigned during Hurricane Ivan. These individuals were the Commanding Officer, the Executive Officer, the Director for Administration, the Director for Nursing Services, the Directors for Medical Services, the Director for Clinical Support Services, the Emergency Management Program Director, and the Director of Resources. Interviews were conducted to understand how the HEICS model was implemented, how it functioned, what individual knowledge existed prior to the implementation of the HEICS model, and individual perceptions about the model's strengths and weaknesses at an MTF. The Directors for the Homeland Security Offices of the Navy, Air Force, and Army, as well as the Head of the DVATEX Program were interviewed to offer other views of the HEICS model.

Documents reviewed were: Naval Air Station Pensacola's Emergency Management Plan, NHP's Emergency Management Plan, situational reports of incident command center meetings with the Bureau of Medicine and Surgery, Executive Steering Committee minutes, all documentation related to Hurricane Ivan and 1997 survey results of California's hospital

emergency preparedness officers. The results of the author's direct observation were reported as factual documentation of events during the time period for this study.

Validity and Reliability

The key participants reviewed transcripts of the interviews to ensure validity of the lessons learned. A database was developed and consisted of formal notes and documents. The author and the emergency management office at NHP maintain this database.

Based on the findings of this study, the author developed an implementation plan for the HEICS model. This model will be proposed to the Emergency Preparedness Committee Chair at NHP for consideration. If approved, it may then be appropriately routed to the Director for the Homeland Security Office of the Navy.

Ethical Issues

All interviewees were informed of the purpose of the study at the beginning of the interview and given the option to refrain from answering questions.

RESULTS

Document Review

The Bureau of Medicine and Surgery

The Bureau of Medicine and Surgery directs the worldwide medical and dental services and facilities of the Department of the Navy. The mission of Bureau of Medicine and Surgery is to ensure personnel and material readiness of shore activities, as assigned by the Chief of Naval Operations; to support, develop, and implement Force Health Protection capabilities within the Navy and Marine Corps; to develop health care policy; and to provide support in the delivery of health care for Navy and Marine Corps personnel. Currently, the Bureau of Medicine and Surgery is in the final stage of developing an emergency management instruction to guide MTFs. As a precursor, it has released interim competencies outlining the knowledge, skills, and abilities required by the command's emergency manager. Two of the leadership competencies mention HEICS but only require minimal awareness of the model.

It is expected that Bureau of Medicine and Surgery will require all MTFs, even those outside the United States, to use the HEICS model (S. Schoen, personal communication, January 18, 2005). The instruction is

expected to be signed in July 2005 and sent immediately to all medical facilities for widest distribution.

The Naval Air Station Pensacola Regional Disaster

Preparedness Plan

The Naval Air Station Pensacola Regional Disaster Preparedness Plan states that the Commander, Navy Region Southeast, Jacksonville, Florida, is the Regional Planning Agent who coordinates disaster preparedness management of all naval shore activities within the state of Florida. The Commander, Navy Region Southeast reports directly to the Commander, Navy Installations who then reports to the Chief of Naval Operations. Naval Hospital Pensacola, as a shore activity, falls within the responsibility of the Chief of Naval Education and Training who reports directly to the Chief of Naval Operations. Its dual chain of command also includes the Bureau of Medicine and Surgery. Commanding Officer Naval Air Station Pensacola delineates disaster preparedness responsibilities for all activities located on Naval Air Station Pensacola, Corry Station, and Saufley Field.

Naval Air Station Pensacola's regional disaster preparedness plan is governed by instruction NASPNCLAINST (R) 3440.4. Guidance for this disaster preparedness plan comes from an Operating Navy instruction (OPNAV 3440.16C)

and Chief of Naval Education and Training instructions (CNET 3440.2B and 3140.1D). The objective of the plan is to assure each Naval Air Station Pensacola Regional activity, within its capabilities, restores primary mission responsibilities; provides humanitarian aid; and responds to major accidents. Even though Naval Air Station Pensacola does not define disaster preparedness responsibilities for NHP, it is required to update and submit a copy of its incident action plan for hurricanes to the Naval Air Station Emergency Operations Center. The hospital is also required to submit a current list of key and essential personnel to the Naval Air Station Emergency Operations Center in order to distribute emergency stickers that will expedite entry onto Naval Air Station Pensacola, Corry, and Saufley Field facilities. In addition, NHP must designate a primary and secondary Disaster Preparedness Assistant to report to the Regional Disaster Preparedness Manager at the Naval Air Station Emergency Operations Center. The plan also states that NHP will ensure that all personnel receive basic ICS training and participate in the coordination of the annual Commander U.S. Atlantic Fleet hurricane exercise, which occurs with Naval Air Station Pensacola and other regional activities.

The Naval Air Station Pensacola Regional Disaster Preparedness Organization operates under the ICS structure and, as such, utilizes an Incident Commander, Operations, Planning, Logistics, and Finance sections. Naval Hospital Pensacola does not fall specifically under one of these five sections, but rather is listed as an Emergency Support Function ¹ of Naval Air Station Pensacola. For example, a Naval Hospital Liaison Officer is identified as an Emergency Support Function for mass casualty events and will report to the Naval Air Station Pensacola Emergency Operations Center immediately upon its activation. However, upon activation of the Naval Air Station Pensacola Emergency Operations Center for an evacuation event, such as Hurricane Ivan, NHP is not listed as an Emergency Support Function that is required to report. This specification could lead to communication difficulties of logistics needs and/or requests between the two commands.

Following operational Navy regulations, the Naval Air Station plan affirms that Department of Defense resource assistance to civil authorities will be determined by FEMA or other lead federal agencies. Furthermore, all state resources, including the National Guard, should be

¹ Naval Air Station Pensacola defines an Emergency Support Function, such as NHP, as the primary medical resource in their disaster preparedness plan.

considered before use of Department of Defense resources are requested (NASPNCLAINST (R) 3440.4, 2001). Military commanders are only authorized to respond to requests from the civil sector to save lives, prevent human suffering, and/or limit property damage (NASPNCLAINST (R) 3440.4, 2001).

The Naval Air Station Pensacola Regional Disaster Preparedness Plan also provides an incident action plan similar to the Job Action Sheets of the HEICS model. The plan is a rough guide for personnel to ensure vital areas are addressed during an emergency. As part of the post hurricane incident action plan, the Naval Air Station Emergency Operations Center acts as the single point of contact for overall coordination for federal, state, and local emergency organizations. They will relay requests for assistance by civil authorities to Chief of Naval Education and Training and the Naval Air Station Pensacola Regional Commander. Naval Hospital Pensacola is required to provide a status of damage, personnel injuries, and hazards to the Naval Air Station Emergency Operations Center.

*The Naval Hospital Pensacola Emergency Preparedness
Management Plan*

Naval Hospital Pensacola is governed by its Instruction 3440.1L, *Naval Hospital Pensacola Emergency Preparedness Management Plan*. Guidance for this instruction includes *National Fire Protection Association, Joint Commission on Accreditation of Health Care Organizations Environment of Care, National Wildfire Coordinating Group Incident Command System Orientation books, and United States Army Medical Research Institute of Infectious Disease and Operating Navy Instruction 3440.16*. The purpose of NHP Instruction 3440.1L is to publish plans and information to provide a supportive environment for patients, staff and visitors.

The NHP instruction includes an Emergency Operations Plan and an Emergency Action Plan. The former is intended to provide guidance and describes how staff and property will be protected in an emergency situation. It uses the ICS structure as its guidance. The later lists requirements for specific staff (i.e., department heads), equipment, and other resources to be used in an emergency.

The NHP emergency management plan is organized into sections based on NHP's hazard vulnerability assessment. The sections identify hazards and assign a risk code to

each hazard based on the probability of the event happening and its human impact (NAVHOSPPLANINST 3440.1L, 2003). It also considers the business impact of an emergency, and the ability of internal and external resources to respond to that emergency at the command level. At the department head level, each hazard must also be addressed with a detailed response plan in the department's standard operating procedures manual. These details are forwarded to the office of the command's emergency manager. Both command and department level plans must address the mitigation, preparedness, response, and recovery for that emergency situation. As an example, the hazard vulnerability assessment for a hurricane emergency in Pensacola, Florida, is assessed as a B level of probability on a scale of A (high probability) to E (low probability). Internal and external resource utilization are noted as 4 and 5 respectively on a scale from 1 (weak resources required) to 5 (strong resources required) for a hurricane emergency.

The instruction, *The Naval Hospital Pensacola Emergency Preparedness Management Plan*, also addresses the hospital's responsibility to the community should such an emergency affect the need for the hospital's services its ability to provide services. Specifically, the hospital

will assist civilian communities to the maximum extent practical as part of a local response. Further, it stipulates that the implementation of the hospital's emergency management plan requires collaboration between and among state and local public health agencies and groups.

The organization of NHP's emergency management plan evolves around the Commanding Officer, who is designated as the Incident Commander for the hospital and its twelve branch clinics. He has the authority to respond to requests from the civilian sector if the condition warrants an immediate response to save lives; however, civilian sector assistance will not supercede essential combat, combat support, or self-survival operations. Additionally, commanding officers must report to higher authority those actions taken under immediate response. Available non-surplus stocks for civil defense or disaster relief may be made loaned to FEMA, to be returned immediately following the end of the emergency period (OPNAVINST 3440.16C, 1995).

Utilizing the ICS structure, the Commanding Officer, NHP, will assign duties and responsibilities through principal sector officers. These include those for operations, planning, logistics, and finance. Sector officers are always assigned, according to the instruction,

and will join the Incident Commander in the incident command center along with the Liaison, Safety, and Public Affairs Officer. Completing the emergency management team is a recorder who is assigned to the incident command center to document response and recovery efforts (NAVHOSPPCLANINST 3440.1L, 2003).

Finally, even though the Commanding Officer, NHP, leads his staff as the Incident Commander, initiation of the NHP emergency management plan does not take place until conditions are set by the Chief of Naval Education and Training for a hurricane (NAVHOSPPCLANINST 3440.1L, 2003). For example, Condition 1 was set at 0001 hours on September 15, 2004 for Hurricane Ivan (G. Rodrique, personal communication, January 13, 2005). At the initiation of Condition 1 the hospital could expect destructive winds and heavy rains within 12 hours or less. It was at this time that the incident command center was established.

Results of Interviews

In April 2003, before HEICS was introduced to the command, NHP identified 79 staff members to receive basic ICS training. Fifty-seven out of 79 attended the training. Of these 57, only 5 were still on staff during Hurricane Ivan.

Navy medicine's DVATEX Team arranged for a site visit to NHP to evaluate and train the staff in emergency management and response in January 2004. The hospital was initially unaware of the purpose of their visit. This January visit is when most interviewees had their initial exposure to HEICS. One of the interviewees did not have any recollection of HEICS being discussed during that visit. A few of the interviewees had not specifically heard of HEICS before the training, but were familiar with ICS. They also participated in the National Disaster Medical System disaster drill in May 2004. Prior to the drill, job responsibility binders including HEICS Job Action Sheets were given to the four principal sector officers by the NHP emergency manager; however, HEICS was never implemented. The National Disaster Medical System is responsible for managing and coordinating the federal medical response to major emergencies and federally declared disasters. All of the interviewees who reported after January 2004, except for the member who became the Situation Leader/recorder during Hurricane Ivan, had no knowledge of HEICS until the week of the hurricane.

On September 15th, less than 12 hours before Hurricane Ivan hit the Pensacola area, the HEICS model was briefed to the Executive Steering Committee and was accepted as the

disaster management plan for the pending situation. All HEICS principal sector officers received the HEICS brief. The HEICS job responsibility binders were distributed to the HEICS principal sector officers.

Interviewees reported that the disaster management command climate of NHP has recently improved. However, it is difficult, though essential, to effectively conduct disaster drills with the "productivity first" emphasis that prevents MTFs from completely shutting down for a drill. Accountability for drill training and attendance was, and remains, difficult to achieve and enforce. Implementing HEICS when there was some role and overall process confusion led to a few individuals controlling the situation and making decisions that were not within their areas of responsibility. There was belief that the sector officers worked well together because they were Executive Steering Committee members and worked closely with each other on a day-to-day basis.

The junior officers and subordinate staff reported that there was confusion at times because as one interviewee put it, "Sometimes staff personnel are used to taking immediate action requests from their work center chain of command. During a disaster situation, overall planning responsibility/direction may come from someone not

normally in a member's chain of command, and this can be confusing." Overall, interviewees felt that they could accomplish what they were assigned to do during the disaster. In part, due to the fact that many of their assigned duties were similar to their day-to-day activities. The decision on which Executive Steering Committee member would fill which sector job was made by the Executive Officer, who based assignment on the skills, known strengths and leadership abilities of the individual staff members and on the pending situation.

Staff assigned to disaster roles that slightly changed their area of responsibility found it hard not to direct their usual day-to-day activities. People tended to fall back into their day-to-day roles. This contributed to conflicts of orders and led to confusion. In addition to the organizational-structural communication issues, some communication equipment did not work as predicted.

Obstacles

The integrity of the HEICS chain of command was not maintained. The responsibility of the stronger sector leaders expanded based on their knowledge, skills, and abilities. Some interviewees reported that there was role ambiguity and too many people loitering in the Incident Command Center. Direct communication between NHP and other

hospitals was non-existent, partially due to the inherent organizational command structure of Naval Air Station Pensacola and NHP. All communications between hospitals were made through the Naval Air Station Pensacola Emergency Operations Center to and from the Escambia County Emergency Operations Center. All community hospitals, except NHP, were represented at the Escambia County Emergency Operations Center. It was reported by some that it appeared that NHP was not a priority for the community and that this could possibly be related to the lack of direct visibility at the county level. Because NHP was not represented at the Escambia County Emergency Operations Center, this severely limited the cooperative ability between NHP and other medical facilities in the community.

Another obstacle to maximum effectiveness of the HEICS model was that subject matter experts were not always in a proper leadership position to make decisions in their areas of expertise, and people with less experience made those decisions. The HEICS model was designed to facilitate communication among other organizations. The issue for NHP personnel was they were not directly communicating with other medical facilities. Additionally, the HEICS model, with its emphasis on horizontal communication, is not well understood or intuitive for military personnel, who

communicate vertically. A more thorough familiarity, through additional training with the Job Action Sheets, might have improved system performance; however, training may come at a cost of lost productivity.

The Naval Air Station Pensacola Branch Medical Clinic Officer in Charge had attended the disaster preparation meetings with Naval Air Station, but due to a lack of space at the Naval Air Station Emergency Operations Center, was told that he was not needed. He was instructed to have his staff remain in their building until evacuation orders for the Naval Air Station were given. He was also informed that the fire department would provide medical care for the emergency operation center, if needed. Upon his return to the Pensacola area, post Hurricane Ivan, he found out that the hospital had sent a liaison to the Naval Air Station Emergency Operations Center.

The HEICS activation plan was not ideal, not wholly used as intended, and there were some organizational-structural communication issues, but the NHP staff used initiative to overcome their unfamiliarity with the HEICS model and gave their best efforts given the circumstances.

DISCUSSION

The commonality of mission and language that will serve as the foundation for the public relations bridge

between the military and civilian environment is one of the key attributes of the HEICS model. The standardized organizational chart and position titles allow familiarity and acceptance among a range of emergency response agencies (Goldfarb, 1996). Furthermore, it provides an opportunity for better understanding of processes, obligations, and limitations of the other 'guy' (Wade, 2002). Leadership support for this endeavor will undoubtedly lead to timely community response and an expedient return to pre-disaster conditions.

In a lesson's learned article by May (2005), an unnamed Florida Chief Executive Officer highlights his decision to place a hospital representative at the county emergency operations center during Hurricane Ivan. This human resource placement was the key to effective communication between the hospital and other levels of assistance. The hospital was also allowed to focus on internal needs, which resulted in an efficient use of human resources.

Although emergency management guidelines for MTFs remain focused on an effective all-hazards preparedness, mitigation, prevention, response, and recovery effort to sustain mission readiness, the lines of interaction with other agencies are becoming increasingly blurred. Goldfarb

(1996) says that the latest trend in regulatory mandates creates an environment that may be receptive to change with regard to improving emergency management efficiency and effectiveness. Treatment facilities, civilian and military, must comply with standards promulgated by JCAHO if they wish its accreditation. Information gathered from a recent JCAHO survey at the National Naval Medical Center emphasized environment of care standards that address response and recovery from emergencies that link the MTF organization in the community (C. Gillette, personal communication, February 1, 2005). Questions from the surveyor focused on knowledge of community emergency management officials, awareness of MTF roles and service to the community, and collaboration efforts and results (C. Gillette, personal communication, February 1, 2005).

True community-wide preparedness can be better facilitated through the use of the HEICS model. According to Rubin (2004), support for the HEICS model has been given by JCAHO in an effort to facilitate health care organization's role in community emergency management efforts.

Three areas that are considered HEICS attributes are deeply ingrained into the military culture. These are a responsibility-oriented chain of command, accountability of

position function, and thorough documentation. The military chain of command specifies who reports to whom, how work is divided, and how communication is supposed to flow. As a key component of the HEICS model, the Job Action Sheet identifies the specific position assigned, task-reporting relationships, and the purpose of the position (Goldfarb, 1996). The Job Action Sheets provide instruction during an emergency so that anyone may use them. As noted by some of the interviewees, the assignments for the sector officers and their functions in the HEICS model, along with the traditional organizational structure of the MTF, confused some of the staff. While hospitals should plan, by position, who will optimally fill specific sector officer functions, theoretically anyone can fill any role in the HEICS chain of command. The HEICS model advocates the use of colored coded vests to facilitate identification of key personnel during a crisis. Vest identification may be beneficial to military personnel who are accustomed to using rank chain of command; however, in any emergency situation, military personnel need to be able to function without a traditional chain of command.

The Navy teaches that accepting responsibility also means accepting accountability for your actions. This can be a difficult task given the frequent transfer of military

personnel and the implicit knowledge they take with them. For this reason, it is important that the HEICS structure is regularly reviewed and Job Action Sheets are updated and new assignments are posted as needed.

Logbooks were once a requirement in the Navy. Although not a requirement today, there is still a limited use for them in tracking important events. An event that is thoroughly documented may be reviewed and utilized as a teaching tool to prevent errors from occurring in the future. Emergency management efficiency and effectiveness may also be traced back through comprehensive incident documentation such as that provided by logbooks. The HEICS forms can also provide documentation for fiscal reimbursement and may serve as evidence in the litigation-prone health care environment (of today) (Goldfarb, 1996).

Overall, documentation of HEICS usage is scattered among the states. In 1997, the San Mateo County EMS Agency conducted a survey of 532 medical facilities in California as part of its HEICS III revision project. Of the 212 surveys returned, 56 percent of respondents said their facility used HEICS as part of its emergency disaster response plan (Pletz, Cheu, Russell, Nave, 1997). Since then, California reports that 97 percent of its acute-care hospitals use HEICS (Starling, 2003). At this time, it is

not known how many health care facilities nation-wide or world-wide are using the HEICS model. State hospital associations, such as that in Ohio, are paying for HEICS training for all of their hospitals and outfitting them with vests and other tangible items (K. Burkholder-Allen, personal communication, November 29, 2004). The Massachusetts Executive Office of Public Safety, Massachusetts Department of Public Health, and the Department of Fire Services Massachusetts Firefighting Academy have developed a comprehensive emergency management tool for health care providers based on the HEICS model. In one year, this emergency management tool has been presented to over 1000 health care providers (M. Taschner, personal communication, January 19, 2005). Worldwide, the HEICS model has been implemented in Canada and Taiwan. Other countries such as Germany, Japan, and Saudi Arabia have requested the HEICS manual for use in their planning for emergency management.

Since 9/11, the Surgeons General of the Navy, Air Force, and Army have placed a high priority on homeland security and have addressed their services' responsibility in the effort to deter the war on terror that continues to seize our nation's attention. Through leadership, education and research, Navy Surgeon General Vice Admiral Arthur,

envisions Navy medicine in a joint medical venture with local, state, and federal agencies that will be able to respond to homeland security threats (D. Arthur, personal communication, September 2004). He emphasizes the importance of the military health system and its integration with other agencies as a *best effort recipe* in the quest for national security. The Air Force Surgeon General, Lieutenant General George Peach Taylor, in his testimony to the House Armed Services Committee, named the base clinics and hospitals that will become part of the local health care disaster network

(http://www.globalsecurity.org/military/library/congress/2004_hr/04-03-18taylor.htm). He also included manpower and expertise as invaluable assets that can be provided to local authorities to assist with detection and treatment for casualties

(http://www.globalsecurity.org/military/library/congress/2004_hr/04-03-18taylor.htm). Finally, the Army has demonstrated its support for homeland security by conducting courses such as the Chemical, Biological, Radiological, Nuclear and High-Yield Explosive Trainer/Controller Course, which it put on in February 2002. Participants in this exercise acknowledged that the civilian community would look to the military for support

and knowledge in a time of crisis. Most importantly, they identified resource and logistical challenges for civilian and military entities when they come together in emergency scenarios.

Efforts are being made to conform to the National Response Plan and National Incident Management System. For example, an Air Force working group met in June 2004 to discuss an organizational-structural template that would be designed around the ICS. It was suggested at that meeting that the HEICS model be incorporated into the Air Force's military medical organizational structure (S. Thresher, personal communication, February 2, 2005). The members felt that it would provide a bridge connecting the military and civilian health care systems and would also meet National Response Plan and National Incident Management System requirements. According to the Chief, Air Force Homeland Security for Medical Operations, there is no current requirement for using the HEICS model (L. Cashion, personal communication, February 1, 2005).

The U.S. Army Medical Command, however, specifically mentions the use of HEICS in Medical Command pamphlet, No. 525-1, dated October 2003. Chapter 7 of the emergency management-planning template provides examples of a Medical Emergency Management Plan matrix and a HEICS matrix for use

by Medical Command's subordinate commands and activities. The U.S. Army Medical Command Emergency Management team is updating MEDCOM Regulation No. 525-4, *Medical Emergency Management*, December 2000. The Chief, Army Medical Command Plans Homeland Security, Lieutenant Colonel Knickerbocker, states that the revision will specifically mandate the use of HEICS (D. Knickerbocker, personal conversation, February 1, 2005).

Not waiting for the Medical Command mandate and following the recommendation of his operations officer, the Commander, Walter Reed Army Medical has given his nod for implementation of the HEICS model in support of their strategic plan (S. Kaser, personal communication, February 3, 2005). Walter Reed Army Medical Center is a large part of the Walter Reed Health Care System that provides comprehensive health care for more than 150,000 soldiers, other service members, family members and retirees in the national capital area (<http://www.wracmc.amedd.army.mil/>).

Mission element 1 of the Walter Reed Health Care System's Strategic Plan identifies the development of leadership in clinical readiness for combat and contingency missions (<http://www.wracmc.amedd.army.mil/>). A weakness identified in this element is a lack of integrated emergency preparedness planning and implementation

(<http://www.wracmc.amedd.army.mil/>). Recognizing the threat profile to the national capital area and working to overcome this weakness, personnel at Walter Reed planned to integrate and exercise an emergency preparedness plan throughout their system. To accomplish this goal, they intend to develop plans, policies, and procedures that would capitalize on system-wide resources for responding to potential contingencies

(<http://www.wracmc.amedd.army.mil/>).

However, the HEICS implementation plan at Walter Reed is on temporary hold as an emergency manager is sought. Nonetheless, the Job Action Sheets have been modified to meet the needs of the facility and the audience for their train-the-trainer implementation plan has been identified. The audience consists of non-commissioned officers-in-charge and Department Chiefs. The goal is to complete training by June 2005 and to test the HEICS model during the next emergency preparedness exercise scheduled for July 2005. The operations officer has identified the loss of their emergency manager and the fear of change, especially by clinicians, as their biggest challenges for the implementation of HEICS (S. Kaser, personal communication, February 3, 2005).

The Head of the DVATEX Program in the Navy Medicine Office of Homeland Security says that the HEICS model fits well with the Navy's military organizational structure. A clear chain of command that is inherent in the HEICS model is also a mainstay of every military organization. The Job Action Sheets assist in putting the civilian and military medical communities on the same playing field (S. Miranda, personal communication, January 26, 2005).

Heading out for their second site visit rotation in March 2005, the DVATEX Team will expect that MTFs have moved forward with their emergency management preparedness plans based on recommendations from the team's first site visits (S. Miranda, personal communication, January 26, 2005). They will continue to focus on opportunities for improvement in hospital operations that could interfere with emergency response, train the staff in response to chemical, biological, radiological, nuclear and high-yield explosive incident response, and conduct exercises of emergency response plans.

The HEICS model will, again, be the standard response system used by the DVATEX Team during its second round of MTF site visits. It is the desire of the Director, Navy Medicine Office of Homeland Security to mandate the use of HEICS through Bureau of Medicine and Surgery guidance to

all Navy MTFs in the near future. The traditional lines of separation between civilian and military communities are becoming increasingly blurred particularly in the health care arena. We are coming together in large part due to the realities of the asymmetric threat posed by weapons of mass destruction. We will (also) need to closely collaborate in the event of a large-scale chemical, biological, radiological, nuclear and high-yield explosive event. Having a common management language will go a long way toward facilitating this collaborative relationship (R. Darling, personal communication, January 25, 2005).

CONCLUSION

In October 2004, one month after Hurricane Ivan hit the panhandle of Florida; the California Emergency Medical Services Authority extended its invitations to participate in the review and fourth revision of HEICS. The membership of this group included 20 health care professionals from across the nation. Of these 20 participants, one is a Navy Medical Service Corps Officer from the Navy Medicine Office of Homeland Security. He queried all Navy MTF emergency managers about their concerns and briefed them to the HEICS IV working group, which has the following goals:

1. To update and incorporate current emergency management practices into the system;

2. To enhance the system by integrating Chemical, Biological, Radiological, Nuclear and High-Yield Explosive events into the management structure;
3. To address and develop a standardized configuration of HEICS to address rural and small hospital needs;
4. To develop a standardized HEICS IV curriculum and teaching aids;
5. To develop instructor credentialing and certification process to ensure standardization in all hospitals across the nation; and
6. To clarify the components of HEICS and its relationship to NIMS

The HEICS IV project is targeted for completion by July 2005. It is expected that this version will be compatible with the National Incident Management System. It is evident that HEICS has become a model for emergency management that many have committed themselves to using. It remains to be seen if HEICS will become the standard for all hospitals.

After 9/11, Americans are more doubtful about their security of their homeland. Learning and adopting new practices and behaviors will require time and effort. A hospital is an investment in the community; and, therefore, it must be protected by a proven emergency management plan.

Building on Fried and Johnson's philosophy of seeing both perspectives, when it comes to change, LeTourneau (2005) also offers a physician's view of change. No hospital can operate without its physicians. Support of the HEICS model will come through knowledge of its benefits and the patience of staff. Adoption of HEICS is a sound business practice, and it should be adopted and implemented by all Navy MTFs.

IMPLEMENTATION RECOMMENDATIONS

The Bureau of Medicine and Surgery should require implementation of the HEICS model. The Navy Medical Office of Homeland Security should be the training agent, and the DVATEX Team should be the model-manager for HEICS and be responsible for developing HEICS competencies, policies, procedures, and curricula. Medical treatment facilities with less than a 60-bed capacity and stand alone branch clinics should be allowed to choose whether to implement the Medical Aid Station Incident Command System, which is designed for free standing clinic or smaller hospitals.

To achieve effective Navy-wide implementation, all emergency managers should attend HEICS executive training. Initially, it may be beneficial for the DVATEX Team to contract a HEICS expert to provide this training on-site. The MTF's emergency manager should be a civilian; this

would provide continuity and expertise. He or she should also report directly to the commanding officer.

The goal of executive HEICS training would be to make the emergency managers experts at HEICS instruction, modification, implementation, and activation. Training should address introduction to, familiarization with, and ways to modify Job Action Sheets to fit the specifics of MTFs. It should include ways to incorporate HEICS into an MTF's emergency management instruction, a train-the-trainer presentation, implementation strategies, and an appropriate and effective partial activation plan for HEICS. Additionally, during the training, the emergency manager should undergo three tabletop scenario exercises and two disaster scenarios that utilize vulnerabilities based on the MTF environment to ensure thorough understanding of the model.

Following promulgation of the mandatory use of HEICS by the Bureau of Medicine and Surgery, a DVATEX mobile training team out of the Navy Office of Homeland Security should be established to provide initial HEICS training in MTFs. Initial training should include an assessment of the MTF's current emergency management plan, HEICS introductory and familiarization training for the Executive Steering Committee and sector officers, and facilitation of two

tabletop drills for the Executive Steering Committee and sector officers (one of which should be done with internal staff only and the other should incorporate resources from community hospitals). Additionally, an activation drill utilizing vulnerability appropriate to the MTF environment should be conducted for the whole staff. The recommendations from the after action report should be expected to be remedied before the next visit by the mobile training team. After the introductory visit, DVATEX assist visits should occur at least every 4 years. After action reports should be kept on file for 8 years. Recommendations for after action reports will be an inspection item for the Navy Inspector General.

Follow-on training should be developed by the Navy Office of Homeland Security for promulgation to MTFs by their emergency managers. The training, given by the emergency managers, should be based upon the vulnerabilities of the MTF and should occur at least twice a year. One of the training exercises should be a full activation of the MTF and be led by the emergency manager of that command. The other exercise should be held in conjunction with other community agencies. All staff members who check in to the MTF and have not received HEICS initial training during their career should receive the

full HEICS training curriculum by the emergency manager within 120 days of reporting. A HEICS awareness brief should be part of the command orientation. Documentation of introductory and follow on training should be readily available in the staff member's training record and should be tracked in the Standard Personnel Management System.

After the MTF is introduced to HEICS by the DVATEX Team, it will take at least a year for the command to become functionally proficient with the model. Completion of the DVATEX Team's introductory visits to all Navy MTF's should take approximately 18 months, with all Navy MTF emergency management plans fully integrated with the HEICS model 3 years after this guidance is issued.

NEED FOR FURTHER RESEARCH

The HEICS model is a useful emergency management tool that will link the military and civilian health care resources in a community. The relationship between these two sectors can be strengthened through the common mission and language that HEICS provides and also through a thorough understanding of each sector's organizational structure. It has been shown that the HEICS model can be implemented; however, collection of data from after action reports has not been collated in order to provide an overall picture of success. It remains to be seen what

goals the HEICS IV working group will set and how they will be achieved nationally. If they are met, HEICS will be a true success. Movement toward an emergency management policy for health care facilities, both civilian and military, hinges on data collected from emergency management models such as HEICS.

REFERENCES

American College of Emergency Physicians (ACEP). (n.d.) The Evolution of Protecting the US: Transition From Civil Defense to Homeland Security. Retrieved October 22, 2004 from <http://www.acep.org/1,33927,0.html>

Bigley, G.A. & Roberts, K.H. (2001). *The Incident Command System: High-Reliability Organizing for Complex and Volatile Task Environments*. Academy of Management Journal, 44 (6), 1281-1299.

Chaffee, M.W. & Miranda, S.M. & Padula, R.M. & Lauda, M.R. & Skelly, J.E. & Oster, N.S. & Bright, R.A. (2004). *DVATEX: Navy medicine's pioneering approach to improving hospital emergency preparedness*. Journal of Emergency Management. 2(1)

Choy, C.S & Wang, T.L. & Chang, H. (2003). *Spontaneous Implementation of the Hospital Emergency Incident Command System (HEICS) during SARS Epidemic*. Retrieved October 23, 2004, <http://www.disaster.org.tw/ENGLISH/ann-med/vol2nol/n23test.htm>

The City of League City, Texas. What is Emergency Management? Retrieved October 22, 2004 from <http://www.ci.league-city.tx.us/index.asp?SID=450>

Department of Homeland Security (DHS). Emergencies and
Disasters. Retrieved October 25, 2004 from
[http://www.dhs.gov/dhspublic/display?theme=14&content=](http://www.dhs.gov/dhspublic/display?theme=14&content=3697)
3697

Department of the Navy (1995). *Navy Civil Emergency
Management Program*. OPNAVINST 3440.16C

Department of the Navy (2001). *Naval Air Station Pensacola
Regional Disaster Preparedness Plan*. NASPNCLA
Instruction (R) 3440.4

Department of the Navy (2003). *Naval Hospital Pensacola
Emergency Preparedness Management Plan*.
NAVHOSPPNCLAINST 3440.1L

Duren, R. (2004). *Pensacola Naval Hospital Recovering from
Hurricane Ivan*. GOSPORT. Pensacola News Journal.

Eyerdam, R. (1994). *When Natural Disaster Strikes, Lessons
from Hurricane Andrew*. Hospice Foundation of America.

The Federal Emergency Management Agency (FEMA). (2004).
Federal Disaster Aid Tops \$1.7 Billion. Retrieved
October 25, 2004 from
<http://www.fema.gov/news/newsrelease.fema?id=14828>

The Federal Emergency Management Agency (FEMA). FEMA
History. Retrieved October 25, 2004 from
<http://www.fema.gov/about/history.shtm>

The Federal Emergency Management Agency (FEMA).

Preparedness: The National Incident Management System.

Retrieved October 25, 2004 from

<http://www.fema.gov/preparedness/nims/nims.shtm>

The Federal Emergency Management Agency (FEMA). Library.

Top Ten Natural Disasters. Retrieved October 25, 2004

from <http://www.fema.gov/library/df 8.shtm>

Fire Engineering (May 2004). DHS approves National

Incident Management System.

Fried, B.J. & Johnson, J.A. (2002). *Human Resources in*

Healthcare, Managing for Success. AUPHA Press,

Washington, D.C./ Health Administration Press,

Chicago, Illinois.

Goldfarb, Z. (1996). *Hospital Emergency Incident Command*

System: Disaster Management for Medical Facilities.

Fire Engineering.

149 (7), 72-78.

Health Care at the Crossroads (2003). Retrieved October

23, 2004,

<http://www.jcaho.org/about+us/public+policy+initiatives/health+care+at+the+crossroads.pdf>

HEICS History. Retrieved October 23, 2004,

http://www.ucihs.uci.edu/emergencymanagement/emergencyMngtProgram/HEINCIDENT_COMMAND_SYSTEM/heIncidentCommand_SystemHistory.html

The Hospital Emergency Incident Command System (HEICS).

About the HEICS III Project. Retrieved October 25, 2004 from http://www.emsa.ca.gov/Dms2/heIncidentCommand_System3.htm

The Joint Commission on Accreditation for Hospital

Organizations. Facts about the Emergency Management Standards. Retrieved September 30, 2004 from <http://www.jcaho.org/accredited+organizations/hospital/s/standards/ems+facts.htm>

LeTourneau, B. (2005). *The Five Stages of Physician*

Reaction to Change. Journal of Healthcare Management. 50, (1), 5-7.

May, E.L. (2005). *Scarred but Smarter: Lessons Learned*

from Florida's 2004 Hurricanes. Healthcare Executive 20 (1), 22-25.

The National Hurricane Center. Retrieved October 25, 2004 from

http://www.nhc.noaa.gov/archive/2004/tws/MIATWSAT_sep.shtml

Navy and Marine Corps Medical News, October 15, 2004.

Training Command Leadership Boasts Hurricane

Contingency Success. Retrieved October 18, 2004 from

all Naval Hospital Pensacola email message.

Navy Hospital Pensacola. History: Naval Hospital

Pensacola, Getting Better with Age. Retrieved October

28, 2004 from <http://psaweb.med.navy.mil/History.htm>

Navy Newsstand. NH Corpus Christi Refines Skills with

Tri-county Emergency Responders. Retrieved October

23, 2004 from

http://www.news.navy.mil/search/display.asp?story_id=1

[5233](http://www.news.navy.mil/search/display.asp?story_id=1)

Pletz, B. & Cheu, D. & Russell, P. & Nave, E. (1997).

Hospital Emergency Incident Command System Survey.

San Mateo County Emergency Medical Services Agency.

Pope, C. & May, N. (2000). *Qualitative Research in Health*

Care. BMJ Publishing Group, BMA House, Tavistock

Stock, London

Rubin, J.N. (2004). *Recurring Pitfalls in Hospital*

Preparedness and Response. Journal of Homeland

Security. Retrieved October 23, 2004 from

<http://www.homelandsecurity.org/journal/Articles/displayarticle.asp?article=101>

Starling, C. (2003). *The Hospital Emergency Incident Command System*. Homeland First Response.

Taylor, G.P. (2004). *Testimony of Lieutenant General George Peach Taylor, Jr. Before the Subcommittee on the Total Force House Armed Services Committee United States House of Representatives*. Retrieved February 5, 2005, from http://www.globalsecurity.org/military/library/congress/2004_hr/04-03-18taylor.htm

Wade, P.C. (2002). *Public-Private Liaison and Partnership in Health Care Have Far-Reaching Benefits for Both*. *IAEM Bulletin*.

Walter Reed Army Medical Center. Retrieved February 5, 2005 from <http://www.wramc.amedd.army.mil/>

Williams, J.M. & Duedall, I.W. (1997). *Florida Hurricanes and Tropical Storms*. University Press of Florida.

Yin, R.K. (2003). *Case Study Research Design and Methods*. SAGE Publications.

APPENDIX A: ACRONYMS

Department of Homeland Security	DHS
Disaster Preparedness Vulnerability Analysis Training Exercise	DVATEX
Federal Emergency Management Agency	FEMA
Hospital Emergency Incident Command System	HEICS
Incident Command System	ICS
Joint Commission on Accreditation of Health care Organizations	JCAHO
Military Treatment Facility	MTF
Naval Hospital Pensacola	NHP
Walter Reed Health Care System	WRHCS

APPENDIX B: INTERVIEW QUESTIONS

1. What type and how long ago did you receive emergency response training prior to hurricane Ivan?
2. How does the culture of Naval Hospital Pensacola contribute to disaster preparedness?
3. Did you feel you could accomplish what you were assigned to do during the hurricane?
4. How did your day-to-day role affect your ability to do your assigned job in HEICS?
5. What were some of the obstacles you encountered in carrying out your Job Action Sheet?
6. Did the hospital appear to work well with the base, regional disaster agencies and community hospitals?

APPENDIX C: TABLE OF TOP TEN DISASTERS BY FEMA RELIEF COSTS

Event	Year	FEMA Funding*
Northridge Earthquake (CA)	1994	\$6.967 billion
Hurricane Georges (AL, FL, LA, MS, PR, VI)	1998	\$2.255 billion
Hurricane Andrew (FL, LA)	1992	\$1.814 billion
Hurricane Hugo (NC, SC, PR, VI)	1989	\$1.307 billion
Midwest Floods (IL, IA, KS, MN, MO, NE, ND, SD, WI)	1993	\$1.140 billion
Tropical Storm Allison (FL, LA, MS, PA, TX)	2001	\$1.375 billion
Hurricane Floyd (CT, DE, FL, ME, MD, NH, NJ, NY, NC, PA, SC, VT, VA)	1999	\$1.054 billion
Loma Prieta Earthquake (CA)	1989	\$865.8 million
Red River Valley Floods (MN, ND, SD)	1997	\$741.2 million

Miami Floods (FL)	2000	\$623.1 million
----------------------	------	-----------------